# SPECIFICATION FOR CARTRIDGES, LASER PRINTER, RE-MANUFACTURED

(THIS SPECIFICATION IS RELEASED FOR PROCUREMENT PURPOSES UNTIL REVISED OR RESCINDED.)

## I. SCOPE, OBJECTIVE AND CLASSIFICATION

A. Scope: This specification covers the REMANUFACTURING OF LASER PRINTER CARTRIDGES

B. The purpose and intent of this specification is to establish the technical requirements for a re-manufactured laser printer cartridge contract.

A remanufactured printer cartridge is a "used" cartridge that has been restored to its original performance standards and function and is thereby diverted from the solid waste stream, retaining, to the extent practicable, components that have been through at least one life cycle and replacing consumable or normal wear components. **A remanufactured cartridge cannot be a "new" cartridge or a remanufactured cartridge with a "new" plastic casing.** An extended hopper may be added to the original base to extend the toner capacity.

C. Classification**:** This specification covers the following Printer and Cartridge types only. Cartridges are divided in two Types and two (subcategories) Styles A and B in accordance with Tables 1 and 2 as follows:

**TABLE 1**

| Hewlett Packard Laser Printers Supported | HP Cartridge # Name | | Weight of Toner (grams) | Page Yield @ 5% Toner Coverage | Type & Style |
|---|---|---|---|---|---|
| 5P, 5MP, 6P, 6MP | C3903A | | 220 | 4,000 | 1A |
| 5SI, 8000, 5SIMX, 8000, 8000N, 8000DN | C3909A | | 840 | 15,000 | 1A |
| 8100, 8150 | C4182X | | 1,100 | 20,000 | 2A |
| 1010, 1012, 1015, 1022, 3015, 3020, 3030 | Q2612A | | 100 | 2,000 | 1A |
| 1000, 1200, 1220, 3300 MFP, 3320 MFP, 3330 MFP | C7115A | | 150 | 2,500 | 1A |
| 1000, 1200, 1200SE, 1200N, 1220, 1220SE, 3300MFP, 3310MFP, 3320MFP, 3320N, 3330MFP | C7115X | | 225 | 3,500 | 1A |
| 1150 | C2624A | | 150 | 2,500 | 1A |
| 1160, 1320 | Q5949A | | 135 | 2,500 | 1A |
| 1320 | Q5949X | | 290 | 6,000 | 1A |
| 1300 | C2613X | | 215 | 4,000 | 1A |
| 1300 | C2613A | | 150 | 2,500 | 1A |
| P1505 | CB436A | | 95 | 2,000 | 1A |
| 1320, 1320N, 1320NW, 1320TN | Q5949X | | 290 | 6,000 | 1A |
| 2100, 2100M, 2100SE, 2100TN, 2100XI, 2200, 2200D, 2200DN, | C4096A | | 240 | 5,000 | 1A |

| | | | | | |
|---|---|---|---|---|---|
| 2200DSE, 2200DT, 2200DTN | | | | | |
| 2300 | Q2610A | | 225 | 6,000 | 1A |
| 2410, 2420, 2420D, 2420N, 2420DN, 2430, 2430TN, 2430DTN | Q6511A | | 300 | 6,000 | 1A |
| 2410, 2420, 2420D, 2420N, 2420DN, 2430, 2430TN, 2430DTN | Q6511X | | 510 | 12,000 | 1A |
| 4000, 4000N, 4000TN, 4050, 4050N, 4050T | C4127X | | 500 | 10,000 | 1A |
| 4100, 4100N, 4100DTN, 4100TN, 4100MFP | C8061X | | 500 | 10,000 | 1A |
| 4200, 4200N, 4200TN, 4200DTN, 4200DTNS, 4200DTNSL | Q1338A | | 700 | 12,000 | 1A |
| 4250, 4350 | Q5942A | | 550 | 10,000 | 1A |
| 4250, 4350 | Q5942X | | 1,050 | 20,000 | 1A |
| 4300, 4300N, 4300TN, 4300DTN, 4300DTNS, 4300DTNSL | Q1339A | | 1,050 | 18,000 | Proposed for future contract |
| 4345 | Q5945A | | 1050 | 18,000 | Proposed for future contract |
| 4600, 4650 – Black Cartridge | C9720A | | 195 | 9,000 | 1A |
| 5000, 5000N, 5000GN, 5100, 5100TN, 5100DTN | C4129X | | 500 | 10,000 | 1A |
| 5200 | Q7516A | | 500 | 12,000 | 1A |
| 5500,5500DN,5500DTN,5500HDN, 5500N,5550,5550DN,5550DTN,5550HDN,5550N – Black Cartridge | C9730A | | 345 | 12,000 | 1A |
| 8000, 8000N, 8000DN | C3909A | | 840 | 15,000 | 1A |
| 8100, 8150 | C4182X | | 1,100 | 20,000 | Proposed for future contract 2B |
| M3027, P3005 | Q7551A | | 300 | 6,500 | Proposed for future contract 2B |
| M3027, P3005 | Q7551X | | 510 | 13,000 | Proposed for future contract 2B |
| M2727. P2015 | Q7553A | | 150 | 3,000 | 1A |
| M2727. P2015 | Q7553X | | 290 | 7,000 | 1A |
| M5025, M5035 multifunction printer | Q7570A | | 780 | 15,000 | 1A |
| P1005/P1006 | CB435A | | 80 | 1500 | Proposed for future contract |
| P2035 | CE505A | | 120 | 2300 | Proposed for future contract |
| P2055 | CE505X | | 290 | 6500 | Proposed for future contract |

A=STD YIELD, X=HIGH YIELD

**TABLE 2**

| Lexmark Laser Printers Supported | Lexmark New Cartridge Reference | Capacity Yield | Weight of Toner (grams) | Page Yield @ 5% Toner Coverage | Contract Type/Style Classification Category |
|---|---|---|---|---|---|
| T630 | 12A7362 | High | 715 | 21,000 | 2A |
| T630 | 12A7462 | High | 715 | 21,000 | 2A |
| T640 | 64035HA | High | 490 | 21,000 | 2A |
| T640 | 64015HA | High | 490 | 21,000 | 2A |
| W820 | 12B0090 | Extra High | 1350 | 30,000 | 2A |

**TABLE 3**

| Brother Printers Supported | New Cartridge Reference | Capacity Yield | Weight of Toner (grams) | Page Yield @ 5% Toner Coverage | Contract Type/Style Classification Category |
|---|---|---|---|---|---|
| HL2040 – toner hopper only | TN350 | High | 100 | 2,500 | 1A |
| HL2040 – new drum assembly | DR350 | N/A | N/A | | 1A |

**Cartridge Type** - Cartridges are divided into **two Types, Type 1** includes standard use cartridges and **Type 2** includes very high page yield and special use cartridges. Cartridges in Type 2 shall meet all the requirements of Type 1 in addition to any additional requirements as specified.

**Cartridge Style** - Cartridges are also divided into **two Styles (subcategories). Style A** includes standard cartridges that are available in the current contract. **Style B** cartridges include later model cartridges where the remanufacturing parts and resources are just becoming available, which are not covered in the future contract to be bid, however are expected to be added in future contracts.

The contractor is required to maintain a stock of the **Style A** cartridges sufficient to meet delivery expectations during the contract.

Classifications are not intended to include all varieties of the commodity for which may be commercially available. Cartridges listed are the most commonly used by the State and does not connote endorsement of any product by the State of North Carolina.

D. Recycling Procedure**:**

User contacts the contractor and request exchange of the spent (empty) cartridge for recycling and replacement with a remanufactured (refilled) cartridge. Contractor exchanges the cartridge with a remanufactured unit from inventory. A remanufactured cartridge is not a new cartridge and shall require the exchange of the empty cartridge. Parts or components shall be replaced to provide performance equal or greater than the Original Equipment Manufacturer (OEM) cartridge.

All cartridges must be reworked in compliance with this specification.

Contractor SHALL NOT remanufacture an existing cartridge if worn beyond reliable remanufacture. The contractor shall provide a virgin core (first time cartridge is being remanufactured) if necessary to return as a remanufactured cartridge at the identical cost to the customer.

E. Qualification**:**

**The remanufacturer shall have prior successful experience providing remanufactured toner cartridges for at least three (3) years at a rate of at least two hundred fifty (250) per month to qualify for the HP cartridges, at least fifty (50) per month for the Lexmark cartridges, and at least fifteen (15) per month for the Brother cartridges. Remanufacturer and any authorized quality assurance location shall maintain laser printers of the same type and manufacture needed to print test sheets for cartridge acceptance qualification of parts and supplies and return cartridge diagnostics.** A history of printer damage, or other unsatisfactory cartridge performance, or the lack of exchange of the used returned cartridges may prevent qualification for the contract.

F. Remanufacturer Certification**:**

The remanufacturer shall certify that each SYSTEM MATCHED combination of replacement parts and batch of toner used in every model remanufactured cartridge provided has been tested in accordance with the Test Methods in Section V to meet or exceed the performance of an OEM cartridge, including print density, print quality, page yield and mechanical integrity. Certification shall also include a confirmation that the Quality Procedures in Section VI have been implemented and are documented.

G. Defect Database:

The contractor shall provide documentation of all defective and rejected cartridges as required for the defect database as outlined in Section VI, QUALITY PROCEDURES. This database, available upon the contract administrator's request and is to be current within 15 days of submission. The database shall be integral with the sales data as submitted to the contract administrator on a quarterly basis. The contractor shall additionally report all user complaints in writing to the contract administrator.

H. Toner Leakage in the Printer:

Remanufactured cartridges shall under no circumstance leak or dump toner inside the printer. The contractor shall provide inspection, cleaning and repair of any printer contaminated or damaged as a result of a defective cartridge without charge to the user. The contractor shall report all such events in writing to the contract administrator.

## II. APPLICABLE DOCUMENTS

THE FOLLOWING DOCUMENTS OF ISSUE IN EFFECT ON DATE OF THE INVITATION FOR BIDS SHALL FORM A PART OF THIS SPECIFICATION TO THE EXTENT SPECIFIED:

Standards adopted for remanufactured toner cartridge evaluation of print quality, print density, page yield and mechanical integrity to the OEM specifications and by OEM comparison evaluation.

- STMC – Guide for Evaluating All-In-One Toner Printer Cartridges, June 2003
- ASTM F1856-04(2009) – Standard Practice for Determining Toner Usage for Printer Cartridges
- ASTM F335-03(2009)– Standard Terminology Relating to Electrostatic Imaging
- ASTM F2036-05e1 – Standard Test Method for Evaluation of Larger Area Density and Background on Electro-photographic Printers
- ISO/IEC 15415:2004, Information technology – Automatic identification and data capture techniques – Bar code print quality test specification – Two dimensional symbols, June 2004
- ISO/IEC 15416:2000(E), Information technology – Automatic identification and data capture techniques – Bar code print quality test specification – Linear symbols, August 2000ISTA 1A - Standard for Integrity Test Procedure 1A
- OSHA Standard 29, CFR 1910.242, Paragraphs a & b for General Industry – Compressed air regulation

References:

American Society for Testing and Materials (ASTM)
American National Standards Institute (ANSI)
International Standards Organization / International Electrotechnical Commission (ISO/IEC)
International Safe Transit Association (ISTA)
Occupational Safety and Health Administration (OSHA)
Standardized Test Methods Committee (STMC), Imaging Technology Council (ITC)

Since this Specification Document requires print contrast, resolution and dimensional evaluation of printed barcodes, the following reference is provided to allow an introduction to the print characteristics necessary to allow successful reading and decoding of the barcodes employed by state agencies. Code 39 and PDF417 barcodes are printed by state agencies and may be used for evaluation of print obtained by the remanufactured cartridge.

Background information on the above mentioned barcodes is available from AIM, a trade association for Automatic Identification and Data Collection (AIDC) technologies. Refer to the following Internet link to: http://www.aimglobal.org/technologies/barcode/

Refer to the Test Methods herein for details of how and when these standards are applicable.

## III. REQUIREMENTS

**A.** General description

1. The contractor shall furnish all labor, supervision, materials, tools, toner, and miscellaneous items to re-manufacture (NOT JUST TO OPEN AND FILL ONLY) laser cartridges used in laser printers in accordance with this specification.

2. All remanufactured cartridges shall meet or equal the performance of an OEM cartridge, including print quality, print density, page yield and mechanical integrity. Cartridges shall contain the minimum toner capacity and page yield as indicated in Tables 1 through 3 herein. Cartridges shall not leak or dust toner inside the printer.

3. The relative humidity in the re-manufacturing, toner storage and toner filling areas should not be less than 20% or exceed 60%. The minimum 20% humidity is especially a concern during the winter months.

4. All components shall be dismantled, examined for damage and/or excessive wear, and replaced as needed (broken or loosely fitting). All the components of the remanufactured cartridges including replaced parts shall be SYSTEM MATCHED by the contractor, and documented for the individual printer.

5. Contractor SHALL NOT remanufacture an existing cartridge if worn beyond reliable remanufacture. The contractor shall provide a virgin core (first time a cartridge is being remanufactured or refilled) if necessary to return as a remanufactured cartridge at the identical cost to the customer.

6. Print quality shall be maintained over the page yield of the cartridge. A comprehensive list of unacceptable cartridge characteristics includes: light print, blasting, ghosting or double imaging, repetitive vertical dot defects, repetitive banding or lines, graying, splotches, character voiding, and variation between cartridges of the same model.

7. A minimum print density for black print shall be equivalent to the OEM cartridge for the page yield of the cartridge. Upon request by the state, the vendor will be required to submit independent third party test data to confirm compliance with this requirement at no charge to the state. The selection of the laboratory employed shall be determined by the State.

8. Page yield shall be determined by the use of the standard pattern, which features 5% toner coverage. Alternately, reduced page yield obtained by the user based upon the total experience level for a given printer shall be sufficient to require the contractor prove compliance to this specification. Page yield may not be reduced by more than 2.0% where the page yield exceeds 10,000 pages in Tables 1 and 2, and 4% for all other cartridges.

9. The re-manufacturing process shall include the following:

   a. Exterior surfaces shall be thoroughly cleaned, with all traces of toner removed entirely. **Older labels shall be removed <u>except for labels that indicate the OEM manufacture</u>**. Any toner residue determined on the cartridge or in the shipping bag upon installation will be considered leakage during shipment, which is cause to reject that cartridge.

   b. Complete disassembly for through cleaning with replacement of any defective/unsatisfactory parts OR ANY MANDATORY PARTS REPLACEMENT, (e.g.: worn gears, bushings and springs). Inspect all pins, clips, foams, doctor blades, felts, etc. and replace as needed. Vacuum out or use compressed air to remove all toner residue that has accumulated on the components and inner surfaces. Clean all parts and polish all reflective surfaces. When used, alcohol must be anhydrous.

   c. Mandatory parts replacement for HP cartridges:
      1) A <u>NEW</u> UNUSED REPLACEMENT PHOTO CONDUCTOR DRUM installed. A new or resurfaced charge transport layer on the OPC drum does not constitute a new photo-conductor drum.
      2) A <u>NEW</u> CLEANING/WIPER BLADE must be installed into each cartridge. Recondition and reset toner bar (doctor blade) spacing as required.
      3) A <u>NEW</u> MAGNETIC ROLLER SLEEVE must be installed into each cartridge.
      4) <u>NEW</u> DOCTOR OR DEVELOPER BLADE must be installed into each cartridge. A FLIPED OVER BLADE FROM A PREVIOUSLY USED PART TO AN UNUSED SURFACE IS NOT ACCEPTABLE.
      5) A <u>NEW</u> PRIMARY CHARGE ROLLER must be installed into each cartridge if originally employed in the OEM cartridge.
      6) Other parts or components shall also be replaced as needed to provide performance equal or greater than the OEM cartridge. **<u>IF NECESSARY, VIRGIN NON-REMANUFACTURED CORES (ONE REMANUFACTURED CYCLE ONLY) MAY BE NECESSARY TO ASSURE OEM CARTRIDGE PERFORMANCE.</u>** Defect rates will be closely monitored.

   d. Mandatory parts replacement for Lexmark cartridges:
      1) A <u>NEW</u> UNUSED REPLACEMENT PHOTO CONDUCTOR DRUM installed. A new or resurfaced charge transport layer on the OPC drum does not constitute a new photo-conductor drum.
      2) A <u>NEW</u> CLEANING/WIPER BLADE must be installed into each cartridge. Recondition and reset toner bar (doctor blade) spacing as required.
      3) A <u>NEW</u> DEVELOPER ROLLER must be installed into each cartridge.
      4) A <u>NEW</u> DOCTOR BAR must be installed into each cartridge. A FLIPED OVER BAR FROM A PREVIOUSLY USED PART TO AN UNUSED SURFACE IS NOT ACCEPTABLE.
      5) A <u>NEW</u> PRIMARY CHARGE ROLLER must be installed into each cartridge if originally employed in the OEM cartridge.
      6) Other parts or components shall also be replaced as needed to provide performance equal or greater than the OEM cartridge. **<u>IF NECESSARY, VIRGIN NON-REMANUFACTURED CORES (ONE REMANUFACTURED CYCLE ONLY) MAY BE NECESSARY TO ASSURE OEM CARTRIDGE PERFORMANCE.</u>** Defect rates will be closely monitored.

   e) Mandatory parts replacement for Brother cartridges and drum assemblies:
      1) TN 350 and TN 460. A NEW UNUSED REPLACEMENT PHOTO CONDUCTOR DRUM installed in each drum assembly. A new or resurfaced charge transport layer on the OPC drum does not constitute a new photo-conductor drum.
      2) TN 350 and TN 460. A NEW DEVELOPER ROLLER and DEVELOPER BLADE must be installed into each toner hopper assembly.
      3) TN 460 ONLY. A NEW DEVELOPER ROLLER STABILIZER must be installed into each toner hopper assembly.

4) Other parts or components shall also be replaced as needed to provide performance equal or greater than the OEM cartridge. IF NECESSARY, VIRGIN NON-REMANUFACTURED CORES (ONE REMANUFACTURED CYCLE ONLY) MAY BE NECESSARY TO ASSURE OEM CARTRIDGE PERFORMANCE. Defect rates will be closely monitored.

10. Refill toner with premium grade virgin toner and reassemble to prevent leakage during shipment. The minimum quantity of toner required in each cartridge is indicated in Tables 1 and 2, however additional toner may be necessary to assure equivalent print density performance to the OEM that is mandatory through the page yield specified.

    a. Reassemble the developing section to prevent the leakage of toner in the printer.

       If an Original Equipment Manufactures (O.E.M.) style seal is reinstalled, the reseal method shall not melt, deteriorate or remove any foams, gaskets or other integral features. The reassembled cartridge and toner hopper mating flanges shall have the identical integrity, including the prevention of the leakage as an OEM construction.

    b. Lubricate as required.

    c. Reassemble and test cartridge to insure proper functioning. Reassembly of the plastic casing shall not depend on extra screws, putty or caulking to prevent the leakage of toner that are not common and recommended industry practice for a particular cartridge.

    d. A new or re-felt fixing wand impregnated with silicon oil on the Nomex felt shall be inserted in the box, as applicable to an OEM cartridge.

    e. Cartridge shall be sealed in an **AIRTIGHT,** anti-static, poly foil or mylar bag. If the bag is not airtight when received the cartridge will be rejected and returned to vendor for replacement.

    f. Vendor to furnish cartridge return kit, including instructions which advise user to save and return cleaning rods with the packaging materials for return shipment. The kit is to include a pre-printed return-shipping label or explicit instructions as to how to obtain the shipping label from the contractor. Instructions to the users are to indicate a toll free telephone number and an email address for which the user can request the return shipping label for free shipping of the returned cartridge(s). The users are not to be charged for pickup of the cartridges by the transportation company employed.

11. Fully functional NEW OEM compatible electronic circuits (chips) must be installed in cartridges originally provided with electronic circuits. It shall be the responsibility of the contractor to comply with all the OEM cartridge specifications including the information flow between the cartridge and printer. Equivalent cartridge performance requires communication with printer software such as HPTOOLBOX to provide printer/cartridge information that includes (1) Device status web, (2) Pop-up alert messages, (3) Email Alert Messaging, (4) Taskbar icon alert, (5) Event Log and any other information available from an OEM cartridge. The printer or computer shall not display error messages or require user intervention to allow proper printer operation. The HPTOOLBOX software is specific to HP printers, chips installed in the Lexmark printers shall also provide printer to cartridge communication and logic to allow equivalent operation to the OEM.

12. The remanufactured cartridge shall be marked where readily visible on (1) the front of the plastic cartridge housing and (2) the exterior cardboard shipping carton to indicate:

    a. Contractor's name and phone number.
    b. Cartridge manufacture's name, model number or designation and compatible printers. For example: Hewlett Packard, HP92298A for use in the HP 4, 4+, 4M+, 4M, 4PLUS, 5, 5M, 5N, and 5SE Printers.
    c. Cartridge refurbished date (either test date or final assembly inspection date).
    d. Identification of the cartridge as a "Remanufactured Cartridge".

13. **Vendor will accept spent cartridges and cleaning rods in any condition of the same type cartridge in exchange for re-manufactured ones**.

## IV. RETURNED CARTRIDGES

1. **Defective toner cartridges returned for leaking or dumping toner inside a printer shall require the contractor to document the cartridge involved, problem identification, resolution and any corrective action implemented. Also printer diagnostics, repair and cleaning necessary due to the reported cartridge problem shall also be documented for review by the State.**

2. All toner cartridges that fail to meet the specifications herein will be returned at the contractor's expense for a free of charge replacement cartridge. Contractor shall supply pre-paid mailing labels, or provide explicit instructions as to how to obtain the free shipping return label from the contractor, or shall pick up cartridge(s) at the buyer's location. Replacement cartridges shall be provided within 48 hours of the notification without charge for any returned cartridge to the user. Replacement cartridges shall be properly marked as replacements and identified by the PO number. Any use of a rejected cartridge while awaiting a replacement will be free of charge to the state and may not allow longer waiting periods for the replacement cartridge except as agreed to by the responsible purchasing user.

3. Rejected cartridges by the user and returned for missing information or parts shall be considered defective, requiring replacement. All cartidges shall be documented in the defect database.

4. Documentation of all defective and rejected cartridges shall be added to the defect database as outlined in Section VI. QUALITY PROCEDURES. This database, current within 15 days of submission, shall be included with the quarterly sales data to be sent to the contract administrator.

## V. TEST METHODS

The remanufacturer shall be certified by the Standardized Test Methods Committee (STMC) of the Imaging Technology Council for having the test equipment, printers and trained personnel for testing to the SMTC guidelines. The contractor may be requested to furnish documentation identifying the test equipment, printers and trained personnel at each location who are successfully trained in the STMC Guidelines. This includes the standardized testing certification for ASTM F 1856-04, ASTM F 2036-05, and ISTA 1A VERSION-99.

Verification that a potential contractor has acceptably obtained the STMC Certification will be determined by an examination of the directory listing of certified companies on the International Imaging Technology Council's (IITC) internet website (http://www.i-itc.org/stmcompanies.htm). Any remanufacturing company without listing on the IITC directory may be disqualified for future bids.

The test methods and standards documented in the "Applicable Documents" section of this specification shall be used by the contractor to verify that remanufactured toner cartridges have been fully remanufactured to equal or exceed the OEM cartridge performance when tested in accordance with the SMTC guidelines.

Upon request by the state, the contractor may be required to have cartridges tested by an independent third party laboratory, such as Rochester Institute of Technology (RIT) free of charge to the state. Ref: http://www.cims.rit.edu/facilities.aspx The bidder or contractor shall also certify that products furnished for the contract shall comply with the print quality, print density, page yield, mechanical integrity, and other properties as evaluated by these test methods.

**All remanufactured cartridges** shall equal the OEM cartridge performance in the legible printing of accurately formed alphabetical characters including symbols such as (_-+=) from a word processing document file in a #2 and #3 pitch character size in a New Times Roman font over the page yield of the cartridge as equivalent to the OEM cartridge. Any cartridge that cannot legibly print the specified content successfully will be considered (1) defective or (2) an indication of the completion of the cartridge page yield. This test may be used for award evaluation in addition to initial acceptance criteria upon cartridge delivery.

The state reserves the right to consider and evaluate the print from a cartridge by contrast, resolution and dimensional accuracy with either the tests noted above or with the evaluation of bar code quality in accordance with parameters established in the ISO/IEC 15415:2004 and ISO/IEC 15416:2000(E) standards. The barcode may be tested in the end use product application or by a dedicated industry standard laboratory such as Ohio University AIDC Lab. Ref: http://www.ohio.edu/industrialtech/aidc/ The ability to print high-density barcode may also be used to evaluate acceptable printed output as compared to an OEM cartridge using identical paper and printer settings. This test may be conducted for contract award and during the contract at no charge to the state. This test requires good print density, good print contrast, minimum blurring with high accuracy in line width and length. Both HP and Lexmark are applicable to this requirement. The print performance can be evaluated with grading of the following ANSI/ISO parameters for the Code 39 and PDF417 barcodes. The total minimum grade level of "B" is required based upon the grading of the following parameters.

- Edge Determination – determination of exactly where a bar transitions into a space (A through F grade).
- Minimum Reflectance – Bar reflectance must be less than half of the space reflectance, usually much less than half (A or F grade).
- Symbol Contrast - Contrast between the lightest space and the darkest bar (A through F grade).
- Minimum Edge Contrast – Looks at the worst-case bar/space pair to make certain the bar is dark enough and the space is light enough (A or F grade).
- Modulation – Makes certain that narrow spaces don't get "lost" between wide bars (A through F grade).
- Defects – Looks at the effect of light "voids" in the middle of bars and of dark "spots" in the middle of spaces (A through F grade).
- Decode – either the bar code symbol met the symbologies Reference Decode Algorithm or it didn't. (A or F grade).
- Decodeability – Assuming the symbol passed on Decode, just how closely did it approximate the Reference Decode Algorithm? (A through F grade).
- Quiet Zones – either adequate (in-specification) clear space was left on the right and left extremes of the bar code, or it wasn't (A or F grade).

## VI. QUALITY PROCEDURES

1) **A copy of the "QUALITY MONITORING FORM" in the Appendix A shall be included in the shipping carton for every remanufactured toner cartridge provided**.

2) Examples of representative printed test pages demonstrating a baseline for print quality, resolution and measured toner density over the page yield for EACH CARTRIDGE MODEL REMANUFACTURED each cartridge remanufactured shall be documented and available for review by a representative of the State. The documented examples shall be consistent with the STMC Guidelines to demonstrate that each cartridge is a SYSTEM MATCHED combination of replacement parts and unique batch of toner that consistently meets the specifications herein.

3) If requested by the state for a specific cartridge model, the remanufacturer shall print and document the standard STMC test pages for each cartridge remanufactured to demonstrate print quality and no print defects.

4) Written procedures are to be maintained for the remanufacture process of each cartridge model provided at each remanufacturing location.

5) A cartridge defect database in softcopy (electronic) format including the user contact information shall be maintained and submitted to the contract administrator on a quarterly basis in combination with the sales data report. The information shall include (a) identification of the user agency, (b) user contact name and email address, (c) problem reported, (d) problem identification, (e) problem resolution, and (f) billing status for all cartridges problems and returns reported to the contractor. The diagnostic for the defect database of any returned printer cartridges shall be performed by the remanufacturer or an authorized quality assurance location. The problem identification and resolution information needs to be of sufficient detail to allow the remanufacturer to make specific corrections to the components or the remanufacturing process involved. **The defect database shall document all cartridges that are RETURNED, REJECTED, DEFECTIVE, or are not in compliance with the specifications herein within five (5) days upon receipt.** The contractor's defect database will be compared to the copies of the Quality Monitoring Form received from the agencies to validate record accuracy. Non-compliance with these Quality Procedures may be sufficient reason for cancellation from the contract.

6) Information identical to that recorded in the defect database, as noted above, shall be reported in writing to the user and agency purchaser (if different) within fifteen (15) business days of a returned cartridge.

## VII. SAMPLING AND INSPECTION

1) Bid Samples: Prior to award, the State may request representative samples of re-manufactured cartridges for evaluation. The evaluation of selected cartridges is considered representative of all the remanufactured cartridges covered by this specification. If submitted samples fail to meet these specifications, the bid may be rejected.

   Samples shall be delivered within five working days after request, to:

   State of North Carolina, Division of Purchase and Contract
   116 W Jones Street, Raleigh, NC 27603-8002

   A pre-award site visit to the bidder's manufacturing facility, by Division of Purchase and Contract representatives may also be required.

2) Random Contract Samples: Samples of delivered items may be selected at random and checked for compliance with these specifications. The State reserves the right to request at any time samples for random testing of remanufactured cartridges by an independent laboratory as designated by the State at the contractor's expense. Unsatisfactory test results or noncompliance to these specifications will be forward to the contract administrator for disposition.

3) Prior to award or during the contract, the state reserves the right without notice to inspect or to have representatives of the state inspect the facilities/location of the remanufacturer and/or the bidder, if different, to determine compliance with this specification.

4) **To assure that the product offered is a remanufactured and not a new cartridge, the state reserves the right at any time to require the bidder provide proof of the following at the bidder's location:**

a) Returned cartridges and shipping invoices or documentation shall be available to confirm the exchange of empty cartridges and that the empty cartridges are returned to the location of remanufacture.

b) Invoices or other documentation shall be available to confirm that OEM-manufactured plastic casing or cores are purchased from empty cartridge collection vendors or facilities to supplement exchanged cartridges that cannot be remanufactured.

c) Invoices or other documentation shall be available to confirm the acquisition of the mandated new replacement parts for the cartridges remanufactured in accordance with the requirements herein.

5) The state also reserves the right at any time to request additional documentation to confirm compliance with these specifications.

## VIII. PREPARATION FOR DELIVERY

A. All items shall be packaged to ensure safe delivery to destination. Re-use of the original packing is encouraged whenever practical.

B. When shipping via common carrier, the packaging required is the OEM type utilizing polystyrene (or equivalent material) to support the cartridge body and end corners.

## IX. Marking for shipment: Each container (multiple cartridges) shall be marked to include the following as a minimum:

Description of Item
Name of Vendor
The State Contract and Purchase Order Numbers.

A. Agencies will be responsible for packaging/boxing of cartridges to be sent to the contractor.

## X. NOTES

A. Cartridges re-manufactured under this specification shall not deviate from those originally contracted for without written approval from the Division of Purchase and Contract.

B. This specification shall, until revised or rescinded by the Division of Purchase and Contract, apply to each future purchase and contract for the product described herein.

## XI. WARRANTY/PERFORMANCE GUARANTEE

Remanufactured cartridges shall have a print life warranty of six (6) months after opening and installing the cartridge. Cartridges shall be free from defects in materials and workmanship and will produce copies of excellent quality during that period.

Remanufactured cartridges shall have a minimum shelf life of nine (9) months, which does not include the six-month warranty period upon opening and installing the cartridge.

The Contractor shall repair, replace or refund any and all cartridges, which the State of North Carolina deems unsatisfactorily. Upon the users receipt or determination of a rejected or defective cartridge, the contractor shall replace the defective cartridge free of charge within 2 (two) business days, or issue a credit for the next purchase if agreeable by the responsible purchasing user. The Contractor must guarantee that use of a cartridge will not void the printer manufacturer's warranty or any maintenance service contract that is in place.

Toner leaks or toner dumping into a printer are the most significant and serious defects that can be exhibited by a printer cartridge. The contractor shall provide inspection, cleaning and repair of any printer contaminated or damaged as a result of a defective cartridge without charge to the user. Service to high volume printers shall be provided within 24 hours of the complaint. Other printers may be serviced within 2 (two) business days.

**ALL USER COMPLAINTS ARE TO BE COPIED TO THE CONTRACT ADMINISTRATOR BY THE CONTRACTORS.**

## XII. ENVIRONMENTAL INITIATIVES

A. The contractor shall certify that the toner shall not contain heavy metals, including mercury, lead, cadmium and chromium (VI).

B. The contractor shall certify that all discarded cartridges and/or other parts are recycled or reused.

## XIII. ORDERING DATA (This information is for Purchase and Contract use only)

A. Purchasers should specify the following in the Invitation For Bid:

1. Title, Number, Date of this Specification.
2. Classification/Type of the cartridge desired.
3. Model number and extended capacity of the cartridge if applicable.

**QUALITY MONITORING FORM**
**FOR REMANUFACTURED TONER CARTRIDGES**
**Term Contract #207A**

# REPORT CARTRIDGE PROBLEMS (RETURNS ONLY) COMPLETE THIS FORM AND FORWARD

## To: Mr. Bahaa Jizi, NC Div. of Purchase & Contract

Bahaa.Jizi@doa.nc.gov or Fax 919-807–4510.

**Return the cartridge to the vendor. Request pickup or free shipping instructions.**

**CONTRACTOR:** _____ **CARTRIDGE MODEL:** _____ **DATE:** ___-___-___

**PRINTER MODEL NO:** _____ **PRINTER LOCATION:** _____

**AGENCY or USER:** _____

**User Contact Person:** _____ **Phone #** _____

**Email Address:** _____ **FAX #** _____ _____

| Check box if these problems are encountered: | |
|---|---|
| ☐ Cartridge received with broken or loose parts. | ☐ TONER LEAKED INTO PRINTER! |
| ☐ Cartridge was not in an airtight bag. | ☐ TONER DUMPED INTO PRINTER! |
| ☐ Toner leaked into cartridge bag. Note amount. | ☐ Page Yield Reduced. How determined? |
| ☐ Fits very loosely or will not fit into printer. | ☐ Prints Unreadable Bar Code. |
| ☐ Immediate Failure or Error Messages displayed. | Cartridge & box was not marked with: |
| ☐ Software fails to read cartridge status. | ☐ Cartridge Model, HP or Lexmark # |
| ☐ Poor Print Quality | ☐ Printer Model # |
| (Please note what defect & when occurred.) | ☐ Contractor's Name |
| ☐ Other – Provide details below. | ☐ Cartridge Refurbished date? |
| Provide additional details or complaints: | |
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| YOUR ASSISTANCE IS APPRECIATED TO DOCUMENT PRODUCT RETURNS. | |

**Report ONLY Defective Cartridges Returned to the Contractor.**

**********End of Document**********